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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/757,049

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Kuan Liang

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EXAMINER

SHIKHMAN, MAX

ART UNIT

PAPER NUMBER

2609

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/757,049

Applicant(s)

LIANG ET AL.

Examiner

Max Shikhman

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8,9 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claim 1 is objected to because of the following informalities: Line 9, "*the whole brightness distribution*" is undefined. It should be changed to "the whole brightness distribution histogram". Appropriate correction is required.
2. Claim 8 is objected to because of the following informalities: "move average" should be replaced with "moving average". Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(1) Regarding Claim 8:

"*Yout(1), Yout(2), Yout(n/2)*" are not defined in Claim 1; "*multiple images*" are also not defined in claim 1. Examiner suggests making Claim 8 depend on Claim 7, since Claim 7 defined "*Yout()*" and "*multiple images*".

(2) Regarding Claim 9:

Claim 9 recites the limitation "*said images*". There is insufficient antecedent basis for this limitation in the claim. Claim 9 depends on Claim 1; Claim 1 does not recite "*images*" at all. Examiner suggests making Claim 9 depend on Claim 8 and making Claim 8 depend on Claim 7.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being unpatentable by **Gonzalez** (Digital Image Processing, 2/E. ISBN-10: 0201180758. Published: 11/09/2001).

Gonzalez discloses *a method for dynamic contrast enhancement by area gray-level detection with an image comprising steps of:*

*transferring color space of said image from color space of RGB to that with brightness Y;*

(Page 299, line 1 and equations 6.2.2, 6.2.3, 6.2.4. I is equivalent to Y.)

*making a brightness distribution histogram based on brightness of said image to get a corresponding relation between a gray level value and a count;*

(Page 100, Figure 3.20. Page 102, Figure 3.22.

Page 326, Example 6.11. "Histogram equalizing the intensity component without altering hue and saturation." Page 327, Figure 6.37, shows a histogram.)

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*dividing the whole brightness distribution into even brightness distribution areas by gray level value, and calculating each amount of counts of each brightness distribution area;*

(page 102, Figure 3.22. Histogram is divided into even areas: 64, 128, 192, 255. The curve in Figure 3.22a is based on the amount of counts in each area.

Page 327, Figure 6.37. Histogram is divided into even areas: 0.25 0.5 0.75 1.)

*according to said amount of counts, deciding a transfer curve to do brightness histogram equalization to the image for forming a new image with enhanced contrast.*

(page 102, Figure 3.22. Figure 3.22a,b gives the transfer curve.

Page 327, Figure 6.37)

7. Claims 1-6, 8, 9 are rejected under 35 U.S.C. 102(b) as being unpatentable by Tretter (US-PAT-NO: 6463173).

(1) Regarding claim 1:

Tretter discloses a *method for dynamic contrast enhancement by area gray-level detection with an image comprising steps of:*

*transferring color space of said image from color space of RGB to that with brightness Y;*

(Figure 5. Column 7, line 1, "205 converts the RGB image data of an input image 109 to a luminance-chrominance representation, step 501."

Column 7, lines 33-40, "RGB image can be converted to YCrCb...")

*making a brightness distribution histogram based on brightness of said image to get a corresponding relation between a gray level value and a count;*

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(col 3, lines 46-55, "producing a histogram having a first axis corresponding to a measurable property (e.g., luminance) and a second axis corresponding to a count of pixels having a particular value for the measurable property.")

*dividing the whole brightness distribution into even brightness distribution areas by gray level value, and calculating each amount of counts of each brightness distribution area;*

(Column 3, lines 46-55, "producing a histogram having a first axis corresponding to a measurable property (e.g., luminance) and a second axis corresponding to a count of pixels having a particular value for the measurable property... histogram is divided into clusters and histogram equalization or stretching is performed on each cluster."

Column 3, lines 64-65, "histogram is partitioned into clusters of equal size."

Figure 7. Different cluster sizes.

Column 6, lines 27-34, "histogram contains counts of pixels having each valid luminance value.")

*according to said amount of counts, deciding a transfer curve to do brightness histogram equalization to the image for forming a new image with enhanced contrast.*

(Column 3, lines 46-55, "producing a histogram having a first axis corresponding to a measurable property (e.g., luminance) and a second axis corresponding to a count of pixels having a particular value for the measurable property... histogram is divided into clusters and histogram equalization or stretching is performed on each cluster."

Column 3, lines 64-65, "histogram is partitioned into clusters of equal size."

Column 6, lines 42-45.)

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(2) Regarding claim 2:

*The method according to Claim 1 wherein brightness Y is YCrCb.*

(col 7, lines 33-40, "RGB image can be converted to YCrCb...")

(3) Regarding claim 3:

*The method according to Claim 1 wherein said color space with brightness Y is YPbPr.*

(Column 7, lines 33-40, "RGB image can be converted to YCrCb...". YPbPr is an analog version of YCrCb, so it is inherent in Tretter.)

(4) Regarding claim 4:

*The method according to Claim 1 wherein in accordance with one aspect of the present invention, the color space with brightness Y is YUV.*

(Column 7, lines 25-26, "CIELab, YUV, or YIQ color spaces.")

(5) Regarding claim 5:

*The method according to Claim 1 wherein said counts here mean the quantity of pixels of a gray level value in said image.*

(Column 4, lines 49-55, "a second axis corresponding to a count of pixels having a particular value for the measurable property."

Column 4, lines 30-31, "FIG. 1 is an exemplary histogram showing the number of pixels of an image having each valid gray level value."

Column 6, lines 27-34, "histogram contains counts of pixels having each valid luminance value.")

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(6) Regarding claim 6:

*The method according to Claim 1 wherein the range of said gray level value is from 0 to 255.*

(Figure 9 shows gray levels between 0 and 255.

Column 1, lines 20-22 and 33-34.

Column 4, lines 31-32, "RGB components each have an allowable range of 0 to 255, Y will fall between 0 and 255.")

(7) Regarding claim 8:

The method according to Claim 1 wherein a move average is calculated by  $Y_{out}(1)$ ,  $Y_{out}(2)$ , . . . ,  $Y_{out}(n/z)$  of multiple images.

(Claim 8 already had 112 2<sup>nd</sup> rejection.

Examiner interprets "images" to be "image". Column 9, line 36. "average (per pixel)".)

(8) Regarding claim 9:

The method according to Claim 1 wherein said images include four successive images.

(Claim 9 already had 112 2<sup>nd</sup> rejection. Examiner interprets "said images" to be "said image".

ABSTRACT: "enhanced digital images")

***Allowable Subject Matter***

8. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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**Conclusion**

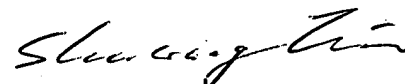
9. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Akerib (USPAT 6460127) discloses, "Apparatus and method for signal processing." Hung, Ching-Yu (US 20020027604 A1) discloses, "Digital still camera system and method."
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Max Shikhman whose telephone number is (571) 270-1669. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Max Shikhman

1/22/2007



**SHUWANG LIU**  
**SUPERVISORY PATENT EXAMINER**